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REMARKS

Claims 1, 6-14, and 19-23, are all the claims presently pending in the application. Claims 2-5 and 15-18 have been canceled. To more particularly define the invention and narrow the issues on Application, Applicant notes for the Examiner's convenience that limitations from these claims have been added to those of independent claims 1 and 14. No new matter has been added.

Entry of this §1.116 Amendment is proper. Since the amendments above narrow the issues for appeal and since such features and their distinctions over the prior art of record were discussed earlier, such amendments do not raise a new issue requiring a further search and/or consideration by the Examiner. As such, entry of this Amendment is believed proper and is earnestly solicited. No new matter has been added.

It is noted that the claims have been amended solely to more particularly point out Applicant's invention for the Examiner, and not for distinguishing over the prior art, narrowing the claim in view of the prior art, or for statutory requirements directed to patentability.

It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. The attached pages are captioned "Version with markings to show changes made".

Claims 1, 6-14, and 19-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Strongin (U.S. Patent No. 6,304,935) (hereinafter "Strongin").

These rejections are respectfully traversed in the discussion below.

I. THE CLAIMED INVENTION

Applicant's invention, as defined for example in independent claim 1 (and substantially similarly in independent claim 9 and 14) is directed to a system (and method) for

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displaying information including an extended bus bridge, a graphics adaptor coupled to the extended bus bridge, and a monitor coupled to the graphics adaptor to display the information.

A feature of the present invention is that an extended bus bridge includes a first portion and a second portion, the first portion being coupled to the graphics adaptor and the second portion being coupled to the CPU. The first portion and the second portion are coupled to each other via a serial link.

A further feature of the present invention, as discussed in the Amendment filed on October 17, 2002, is that the graphics adaptor is localized to the monitor, and the graphics adaptor and the monitor form a display unit (e.g. see page 3, lines 9-12; page 5, lines 7-10, page 6, lines 8-9; and page 10, lines 8-9).

An exemplary configuration of the system (and method) for displaying information is shown in Figs. 3-4 of the application and clearly includes an extended bus bridge with a first portion and a second portion coupled to each other via a serial link and where the graphics adaptor is localized within the monitor, is shown in Figs. 3-4 of the application.

With such novel and unique features in the claimed combination, a system for displaying information with a connection between a PC and a monitor can avoid the problems of having a bottleneck in the system caused by having to carry all of the bandwidth of the high resolution image in a connecting cable.

The conventional systems, such as those discussed below and in the Related Art section of the present application, do not have such a structure, and fail to provide for such an operation.

Indeed, such features are clearly not taught or suggested by the cited references.

III. THE PRIOR ART REFERENCES

The Examiner asserts that:

[Regarding claim 1, 9, and 14] Strongin discloses a method and system for data transmission in data processing systems, especially in the context of data processing systems utilizing the Accelerated Graphics Port (AGP) interface standard.

As shown in FIG.1 a high-level component diagram depicting

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an AGP-enabled data processing system 101 which forms an environment wherein one or more embodiments of the present invention may be practiced.

Further depicted are display device 110, local frame buffer 112, Central Processing Unit (CPU) 114, system memory 116, Peripheral Components Interconnect (PCI) bus 118, various Input-Output, (I/O) devices 120, Southbridge 122, Industry Standard Architecture (ISA) bus 123, and I/O devices 125. Strongin fails to disclose (sic) graphic adaptor is localized to the monitor.

However, Applicant again respectfully disagrees and submits that the Examiner's assertions are erroneous. Further, Applicant respectfully submits that the Examiner appears to misunderstand the novel features of the invention and that the problems addressed by Strongin and the present invention are entirely different.

Firstly, in the present invention, an object in the present invention is to solve a problem of a bandwidth bottleneck in cables and wires connecting the PC or workstation to the display subsystem. As shown in Figs. 3-4 of the present invention, this problem is solved by having an extended bus bridge, with a first part and a second part connected via a serial link, connecting the CPU to the graphics adaptor.

In the present invention, as shown in Fig. 3, the CPU is connected to a first bus portion (e.g., bus 0 with a first protocol), the other end of the first bus portion is connected to one end of a wire serial cable 302 (e.g., with a second protocol), and the other end of the wire serial cable 302 is connected to one end of a second bus portion (e.g., with a second protocol), and the other end of the second bus portion is connected to the graphics adaptor. In the novel and non-obvious structure of the present invention, a first protocol is transformed to a second protocol which lends itself to a cable (e.g., serial cable) and then back to the first protocol.

Thus, with the structure of the present invention, the problem of writing data from the graphics frame buffer to the remote display through the display cable is addressed by using a bus bridge in which a first portion of the bridge and a second portion of the bridge are connected by a serial cable link. In other words, instead of locating a serial link portion of a connection at a position between the graphics adaptor and the monitor, the serial link portion of the connection is

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located between the CPU nor and the graphics adaptor.

Additionally, neither the CPU nor the graphics adaptor are connected to the lower serial link portion (e.g., for high speed serial data) of the connection. As described in the specification (e.g., page 5, lines 11-12), the serial link of the present invention only carries information that changes (e.g., not a continuously refreshed data as in the prior art).

In sharp and fundamental contrast, Strongin addresses the problem of inefficient data transfer from the CPU to an AGP-enabled device by designing a "*device mimicking unit 300*" in the NorthBridge itself.

~~The device mimicking unit mimics the original graphics controller device in all aspects but has a larger command queue.~~ For example, Strongin discloses "*since graphics controller command queue mimicking buffer 304 has substantially larger storage space than graphics controller command queue 200, there will be a substantial reduction in the bottlenecking ordinarily caused by graphics controller command queue 200*" (e.g., see column 10, lines 54-58). Thus, in Strongin the solution is to employ a form of buffer memory between the CPU and the AGP-enabled device.

Additionally, in Strongin, as shown in Fig. 1, a serial cable (e.g., not referenced) connects the AGP-enabled graphics controller 100 to the display device 110. Thus, the structure of Strongin is similar to the conventional art disclosed in Fig. 1 of Applicant's application, and attendantly would have many of the same problems.

This is much different from the present invention in which a serial cable (e.g., high speed serial data) is connected between PCI/AGP bus bridge portions (e.g., parallel data) for transmitting higher bandwidth raster level data to the CPU and the graphics adaptor respectively.

Thus, as described in the Amendment filed on October 17, 2002, the present invention provides a completely different structure to address a completely different problem related to bandwidth bottlenecks. That is, in the present invention, the object is to solve a problem of a bandwidth bottleneck in cables and wires connecting the PC or workstation to the display subsystem. In the structure of Strongin, this would correspond to the cable connecting the graphics controller 100 to the display device 110, as shown in Figures 2-4.

Thus, contrary to the Examiner's assertions, while Strongin addresses the bottleneck of writing (texture data) from the CPU to the graphics controller frame buffer, the present invention,

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in contrast, addresses the bottleneck of writing the data from the graphics frame buffer to the remote display through the display cable. That is, Strongin does not address a problem of a link between the AGP-enabled graphics controller 100 and the display device 110, as shown in Figs. 2-4.

In contrast, the approach of the present invention is to replace the current bridge design by an "extended bus bridge". The extended bus bridge behaves, from a system's perspective, as a regular bus bridge, but the implementation of the extended bus bridge involves two separate devices each residing on a different system and connected by a set of communication wires (e.g., forming a cable). The two sides of the bridge interface to the local and the remote PCI (e.g., or AGP) busses.

Further, the Examiner admits that "Strongin fails to disclose (sic) graphic adaptor is localized to the monitor" (e.g., see page 3 of the Office Action) and he asserts "absent a showing of critically (sic) and/or unexpected result, it would (sic) been obvious". Applicant respectfully disagrees and again submits that there is a critical and unexpected result.

Specifically, the elimination of a bottleneck in the system caused by having to carry all of the bandwidth of the high resolution image in a connecting cable. Nowhere does Strongin teach or suggest "*a monitor coupled to said graphics adaptor to display the information, such that said graphics adaptor is localized to said monitor and said graphics adaptor and said monitor comprise a display unit.*" As described above, in Figs. 2-4 of Strongin the display device 110 is completely separate from the AGP-enabled graphics controller 100 and cannot provide the novel features and advantages of the present invention.

Thus, turning to the clear language of independent claim 1 (and similarly that of independent claims 9 and 14) Strongin fails to teach or suggest "[a] system for displaying information, comprising:

an extended bus bridge, said extended bus bridge including a first portion and a second portion;

a graphics adaptor coupled to said extended bus bridge at the first portion of said extended bridge;

a central processing unit (CPU) coupled to said second portion of said extended bridge;

a monitor coupled to said graphics adaptor to display the information, such that said

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graphics adaptor is localized to said monitor and said graphics adaptor and said monitor comprise a display unit; and

a serial link for coupling together said first and second portions of said extended bus bridge" (emphasis Applicant's).

Further, dependent claims 6-8, 10-13, and 19-23 when combined with independent claims 1, 9, and 14, respectively, recite novel and non-obvious features.

Thus, claims 1, 6-14, and 19-23 of the present invention are fully patentable over Strongin.

III. FORMAL MATTERS AND CONCLUSION


The drawings have been objected to because they allegedly fail to show the RF link or the IR link of claims 6 and 19. In response to the Examiner's objections, Applicant files herewith a Submission of Proposed Drawing Corrections for Figures 3-4 showing a communication link.

In view of the foregoing, Applicant submits that claims 1, 6-14, and 19-23, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,


Sean M. McGinn, Esq.
Reg. No. 34,386

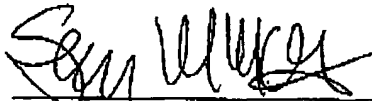
Date: 3/3/03
McGinn & Gibb, PLLC
8321 Old Courthouse Rd. Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254

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CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that I am filing this Amendment by facsimile with the United States Patent and Trademark Office to Examiner Dinh, D., Group Art Unit 2674 at fax number (703) 872-9314 this 3rd day of March, 2003.



Sean M. McGinn, Esq.
Reg. No. 34,386

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 2-5 and 15-18 have been canceled without prejudice or disclaimer.

The claims have been amended as follows:

1 1. (Twice Amended) A system for displaying information, comprising:

2 an extended bus bridge, said extended bus bridge including a first portion and a
3 second portion;

4 a graphics adaptor coupled to said extended bus bridge at the first portion of said
5 extended bridge;

6 a central processing unit (CPU) coupled to said second portion of said extended
7 bridge; [and]

8 a monitor coupled to said graphics adaptor to display the information, such that said
9 graphics adaptor is localized to said monitor and said graphics adaptor and said monitor
10 comprise a display unit; and

11 a serial link for coupling together said first and second portions of said extended bus
12 bridge.

1 14. (Twice Amended) A method of decreasing a bottleneck in a communications bus,
2 comprising:

3 coupling a graphics adaptor, a central processing unit (CPU) and a display monitor
4 over said communications bus;

5 providing an extended bus bridge between said graphics adaptor and said central
6 processing unit (CPU); and

7 localizing said graphics adaptor to said display monitor and said graphics adaptor and
8 said monitor comprise a display unit,

9 wherein said extended bus bridge includes a first portion and a second portion.